

BRAIN GYM®

Self Empowerment through Movement

by **Shayne Niehaus**

As you pack your tog bag for another session at the gym, did you ever give a thought to your *brain's fitness*? Generally speaking, we all know that 'exercise is good for you' but what is not so well known is the fact that every time we walk, run, jog, or engage in any kind of bodily 'cross-over' activity, we are re-organising and reinforcing positive central nervous system operation.

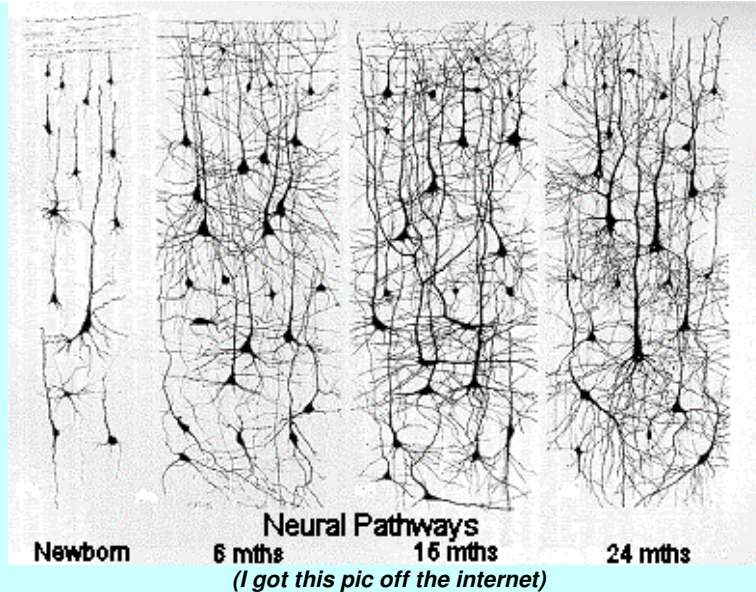
Movement is *the* great de-stressor. When the adrenal glands start pumping out adrenalin in reaction to severe stress, our physiological responses engage 'survival mode' and we *should* start to move in one way or the other – either 'fight or flight' – and in so doing utilize the extra energy surging through our bodies. Then after the danger has passed, we are supposed to rest and recuperate. These reflexes evolved over billions of years and are still with us today. However, our stresses are much different but our bodies still react in exactly the same way, as it is not a lion at the cave entrance but our boss at the office door and we can't exactly run for cover or stab him with our spear! And good old R&R is at the most, 12 months away. Those of us who have very stressful lives should therefore exercise regularly in order to de-stress.

Some very interesting facts have come out of many years of research into how our brains work ... Nature not only designed our survival reflexes, but our *learning reflexes* too. We now know that there are *specific developmental movements* that develop and strengthen the neural connections throughout the brain and throughout the central nervous system.

A crucial milestone for the developing child is crawling. Crawling stimulates both the receptive and the expressive parts of the brain and forms such a vital stage in a child's life, that if this process is hindered or interrupted in any way, the child may at worst display learning difficulties, or at best create adaptive, compensatory and less efficient learning methods. What happens within the crawling movement, is that an inter-connected neural communication network starts developing across the corpus callosum (the area where left and right hemispheres join linking the two brain hemispheres). The neuron is the basic unit of the nervous system, aka the nerve cell. It is that which conducts an electrical impulse from one part of the body to another along these neural pathways. It has been estimated that babies need to make about 50 000 crawling movements to provide sufficient neural pathways to integrate left and right hemispheres *fully*, to enable optimal learning capabilities as they grow older. Most of us probably got less than 10% of that figure.

Needless to say, walking rings and other similar convenience tools of the 21st century are best left alone. There is a reason why your baby needs to crawl – we are designed to learn through whole-body movement. Sometimes children don't ever crawl, but 'scoot' along their bums until they get up and walk and so they miss out on an important developmental phase.

Symptoms of an un-integrated brain manifests in very slow learning, struggles with reading and writing, attention/concentration/focus problems, clumsiness and sometimes even general health problems and hyperactivity. Stressed out adults will recognize when pressure is getting the better of them when they feel 'brain-dead' and can no longer think clearly. Well, it's impossible to think reasonably and rationally when almost all the brain activity is situated in the survival areas of the brain!!



One way to look at neural pathways is to use the analogy of a metropolis ... if there are insufficient access or arterial roadways into and out of the metropolis, during periods of peak traffic flow we will experience traffic jams. Our brains work similarly. If our brains have insufficient neural pathways (either because we didn't crawl long enough, or because of ill health and we were incapacitated in some way), during periods of stress we effectively experience internal traffic jams and find it hard to process and understand information, or think clearly.

Many people today have unfortunately developed 'homolateral' mental processing which means they are limited to 'one-sided' thinking – they can literally only access either the right hemisphere OR the left hemisphere of their brain at once. Whilst these people subconsciously manage this 'parallel processing', what they can display are co-ordination problems at various levels and the end result is a feeling of frustration and a less-than-ideal performance. A seriously 'homolateral' individual is easily confused by any bilateral activity. Everyday tasks like walking, running or hopping, all require increased effort and control.

They also tend to move in such a way that the spine, cranial bones, and sacrum do not work as a fluid unit. This can result in cerebrospinal fluid not flowing as it should (it nourishes and cools the brain) and this can be further exacerbated by the fact that these individuals may also tend to hold their breath a lot or breathe shallowly. Whilst they can learn to repeat material parrot-fashion and may even thrive on the familiarity of automatic or conditioned behavior, they are denied true learning experiences and uniquely personal 'light bulb' moments because hemispheric integration has not been possible for them.

One of the biggest culprits for the increase of 'homolateral' states, is the increase in preference for two-dimensional activities e.g. computer games, video games, movies and television. How often do we plunk our kids in front of a video to keep them quiet for a couple of hours?! The danger is, if these activities are encouraged before a child has developed integrated 3-D visual skills and depth-perception skills, learning problems may manifest at a later stage. These kids will still learn, only they are going to need to work harder and expend more energy than their peers to get the same result. As any smoker will attest, bad habits are difficult to 'un-learn'. Kids are meant to run, jump, play, skip, climb trees, hang upside down, roll around, somersault and ride bikes and as parents we must encourage this rather than computer games. Physical movement forms a vital part of our developmental process as it encourages bilateral learning patterns vs homolateral ones.

Other reasons for abnormal crossing and learning patterns are

- An injury during the normal crawling period may prohibit movement at that time
- We all have a dominant left or right hemisphere, but natural dominance may be interfered with by insisting on placing a pen in the right hand of a dominant left-hander.
- However, left dominant children may also find themselves confused by a right dominant world – buy left-handed scissors for your left-hand dominant children!
- Sometimes crossing and dominance develop normally, only to be disturbed in adult life. Physical injury, strokes or severe illness can cause the non-dominant hemisphere to take over simple "housekeeping" duties, while the dominant hemisphere does some major 'repair work'. The dominant side should resume its activity from the non dominant side when the crisis is over; however, it sometimes cannot do so without re-education. Brain Gym is excellent in this instances.
- Many so-called "clumsy" children may also be victims of either muscular imbalance or homolateral dominance, causing movements to be uncoordinated. Sometimes balance is lost because one muscle is weak in relation to another thus disturbing muscle balance.
- Sometimes academic or behavioral issues are caused by the incomplete progression of childhood reflexes. These reflexes are supposed to develop, become integrated and useful as a neural pattern, but then be "inhibited" into the nervous system or fall away to a large extent. Early trauma can cause the orderly progression of reflexes to go into a "holding pattern", resulting in a wide variety of emotional, physical and academic challenges later on. During the development of the fetus there are a group of reflexes which emerge called the 'primitive reflexes'. These primitive reflexes should be present at birth as they provide an indication of the status of the Central Nervous System. (*This is why doctors test these primitive reflexes - to see if the nervous system is developed sufficiently or if it is underdeveloped*). These primitive reflexes should slowly be inhibited during the first year of life and in so doing, another group of reflexes called the postural reflexes, should emerge to help **the infant or child cope** cope with the demands of gravity. If there is a cluster of primitive reflexes remaining, this can indicate that the Central Nervous System has been compromised in some way.

Learning is meant to be fun, natural and above all, stress-free. One only has to watch an infant explore its world and behold the wonderment, bewilderment and astonishment that manifests itself as it starts to take its first steps towards independence, to know that this is our natural learning state. By moving, children learn how their bodies move in space bringing understanding to where they are in relation to their environment. This is achieved through co-ordination of muscle proprioception and receptors in the inner ear. All the senses (visual, auditory and tactile) must work together with the kinesthetic intelligence for balanced learning.

Teachers of the world take note: any emotional stress at the time of learning is going to limit and distort both *what* is learnt and the ability to learn!! Many learning 'blocks' are emotional in nature. Yelling at a child because they cannot get something 'right' will only teach the child that they are worthless. When learning occurs under a stressful situation, the brain will recall only one-sided aspects of that learning and will fuse the *emotions* to the *event*. When the situation is repeated and reinforced, the learning becomes anchored to the stress and brain-integration flies out the window.

Most of us are actually more intelligent than we believe ourselves to be (!), but our 'learning blocks' are only within our physical, emotional or perceptual abilities. Perhaps with a different teaching approach coupled with more understanding and patience, or even being able to learn in the dominant language of our own particular learning style (be it visual, auditory or kinesthetic) schools will go a long way to maximizing the potential of all their students (and maybe we would have done better in those history exams!)

To the question 'what causes learning difficulties' I would answer

- Very infrequently, lesions in the brain (separation of brain tissues affecting speech, language perception or comprehension)
- Occasionally, **possible** problems associated with **the inner ear and inner ear infections**
- Some of the time, miscommunication between the right/left hemispheres: Carl Ferreri of the Ferreri Institute in NY believes that *'head injuries and especially forceps delivery is one major cause of neural disorganization causing cranial imbalances, resulting in dyslexia and often ADD and ADHD'*. He believes that these difficulties are not diseases, but a combination of disorganisations within the central nervous system.
- Almost all the time, emotional stress at the time of learning creating a 'blind spot' to a given learning skill due to fear, fear of pain or pain itself. (Incidentally, not only can we be 'dyslexic' in reading and writing, but we can be 'dyslexic' to situations, people, tasks ... anything you can imagine).

When it comes to the actual learning process, I like to use the analogy of learning to drive a car. In the beginning, it seemed there were so many things to remember all at once...check the rear-view mirror, engage the clutch, move into first gear, release the clutch, push the accelerator, steer straight ... brake!! All this happened in what we call mental 'Low Gear'. We were operating on 'manual' – this stage is all about getting the details right – very much left brained and logical. By the time we were familiar with driving, one could say we were operating in mental 'High Gear' or on 'automatic pilot'. In this stage we see the 'big picture' (right hemisphere) and a lot of the things that we had to consciously think about before, became second nature. In a healthy situation we will instinctively know when to 'gear up' and 'gear down' – this is true integrated learning. It's all about moving between the logic left and the gestalt-right (big picture) hemispheres with ease.

If we get stuck in Low Gear or we get stuck 'in the details', we will feel that we are not moving forward fast enough, we will get over-focused on unimportant details, feel that 'we can't do it', end up with low self-esteem and a lot of fear and apathy as a result, and might even sleep too much and feel depressed. On the other hand, being stuck in High Gear isn't healthy *either* – these people just cannot slow down, they are the workaholics of the world, or control freaks, tend to be perfectionists, never take a break, are critical, judgmental, know everything and are heading for burnout!

The good news is, that for any child or adult displaying learning or coping challenges, Educational Kinesiology's (Edu-K) learning-readiness program 'Brain Gym'®, is able to effectively help the poorly-learned lessons of the past and fill any developmental gaps. Brain Gym® comprises 26 very simple and natural physical movements that *prepares* the brain for learning and *enhances* all types of learning activities as it activates all areas of the neo-cortex, the frontal lobe especially, left and right brain hemispheres, and also integrates all our senses for 'whole-brain' learning. From the school room to the board room, Brain Gym® will help anyone to maximise their potential.

Brain Gym® serves as an excellent starting place in the search for better health and quality of life. Its benefits spill over into many areas of life and it also integrates superbly well with other modalities, often enhancing their over-all effectiveness.

Brain Gym® Consultants all over the world report improvements in

- Abdominal muscles (correlates to improved posture and supported spine)
- attention spans, discipline, attitude, general performance and behaviour
- being able to cross the visual/auditory/kinesthetic/tactile midline
- binocular & peripheral vision
- breathing
- centering, grounding, balance
- comprehension and understanding
- concentration, focus

- co-ordination vs clumsiness, spatial awareness
- creative writing
- decoding and encoding of written symbols
- energy levels
- eye-hand co-ordination
- fine motor skills
- following directions
- hearing and listening abilities (*the two are very different! Finding it hard to follow instructions, being unable to concentrate and have difficulty processing information can be as a result of an imbalance in this skill. **Many people have selective hearing, not hearing loss!** Listening is being able to cut out the irrelevant information and only process important information. Many learning and behaviour problems relate to this*).
- integrating childhood reflexes (*symptoms of which manifest in specific behavioural patterns in infancy and pre-school years, and in later years even panic disorders and low tolerance to stress*).
- Irrational fears
- left and right postural awareness, body awareness, movements skills
- mathematics and computations
- mild physical problems
- motivation and positivity levels
- Penmanship, cursive writing, creative writing
- personal organisational skills and personal relationships
- reading (silent and oral) and writing abilities (especially good for dyslexia) relating to L-R eye movements
- re-establishing the natural learning pattern of a whole-brain state as the process releases blocked learning patterns of any description
- self confidence and self-esteem
- Short and long-term memory
- speech
- spelling
- sporting prowess and stamina
- stress levels (some movements are designed to calm and relax – good for exam times)
- symbol recognition for the decoding of written language
- team building
- the ability to handle difficult or specific situations
- the ability to learn and, very importantly, to *retain* what is learnt
- visual discrimination

What Brain Gym® does is direct brain wave activity and electrical energy away from the **SURVIVAL AREAS** of the brain (brain stem/back-brain) through the **LIMBIC SYSTEM (EMOTIONAL MIDBRAIN)** to the **FRONTAL LOBES** where deeper understanding and high level thought processes occur. We are then able to easily process information from the 'whole to parts' (right 'Gestalt' hemisphere) and from the 'parts to the whole' (left 'Logic' hemisphere). Doing Brain Gym® balances all aspects of the brain and with all areas integrated and harmonised, energy flows freely between all areas, revitalising and restoring balance to the mind/body system in the process.

There are two halves to the body's controlling nervous system. Most people are aware that the right side of the brain controls the left side of the body, and the left side of the brain controls the body's right side. The left-logic brain deals with the academic functions eg. arithmetic and language. The right-gestalt hemisphere deals with emotions, artistic ability and helps us to see the big picture. For example, dyslexics learn to read words as whole pictures (right brain), but are unable to break the word into its phonetic components (a left brain activity). Right or left side dominance is controlled

primarily by heredity. As previously described, the crossing mechanism develops first by crawling, then by walking and running; within these movements there is crossing of nerve function. As one leg moves forward, the opposite arm moves forward. This crossing action "educates" and organizes the nervous system. We may perceive our world from two entirely different perspectives; either as a whole (through the Gestalt Hemisphere) or one piece at a time (through the Logic Hemisphere). Our awareness of what we know is influenced by the hemisphere dominance of our brain.

Just above the left ear is a part of the brain known as the Common Integrative Area (CIA). This is where the learning process is completed and comprehension takes place. Often the gestalt brain gets credit for what is really the work of an integrated brain. Right brain takes the unedited movie version of your experience, and the left-brain takes it to post-production in your CIA and edits it – often via your belief system!

GENERAL CHARACTERISTICS OF LOGIC AND GESTALT	
LOGIC	GESTALT
<i>Processes from pieces to whole</i>	<i>Processes from whole to pieces</i>
<i>Parts of language</i>	<i>Language comprehension, metaphors</i>
<i>Syntax, semantics</i>	<i>Image, emotion, meaning</i>
Numbers	Rhythm and application
<i>Techniques (sports, music, art)</i>	<i>Flow and Movement</i>
<i>Thinking</i>	<i>Feeling</i>
Logic	Intuition
<i>Looks for differences</i>	<i>Looks for similarities</i>
<i>Controls feelings</i>	<i>Free with feelings</i>
<i>Linguistically oriented</i>	<i>Prefers drawing, manipulation</i>
<i>Planned, structured</i>	<i>Spontaneous, fluid</i>
<i>Sequential thinking</i>	<i>Simultaneous thinking, multi-tasking</i>
<i>Future oriented</i>	<i>Now oriented</i>
<i>Time conscious</i>	<i>Less time sense, more spatial</i>
<i>Structure oriented</i>	<i>People oriented</i>
<i>Myopic</i>	<i>Hyperopic</i>
Goal oriented	Process-oriented
LINEAR/SEQUENTIAL	GESTALT/SIMULTANEOUS

Brain Gym® works so well because it integrates the three dimensions of the brain being either stimulating (**Laterality Dimension** - **Left-right and midline**), relaxing (**Centering Dimension** - **involves the limbic mid-brain lower cerebrum, and upper-lower body**) and/or releasing (**Focus Dimension** - **frontal lobe-back brainstem**) in function. Co-ordinating the Lateral Dimension optimally is crucial to reading, writing, communicating, and fluid movement. The inability to cross the 'midline' results in labels such as 'learning disabled' or 'dyslexic'. It has been theorized that when lateral (left-to-right)

skills are taught before centering is established, children will compensate for their lack of vertical body awareness with poor posture, visual stress, and the inability to accurately reproduce letter or number shapes. *In essence, what they cannot feel in their bodies—the vertical and horizontal planes—they cannot reproduce without stress and effort.*

The ability to 'centre' is important for feeling and expressing emotions, being grounded, balanced (both physically and metaphysically), organized, having a sense of personal 'space' and being *relaxed*. An inability to stay centered can result in irrational fear, fight-or-flight responses, or an inability to feel or express emotions. Someone who is 'centered' is able to respond rationally rather than reactively. And nothing can be truly learned without a meaningful and positive emotional component – one only has to think of trying to study something boring vs something exciting. Guess which subject is retained faster?! Gross motor co-ordination skills and moving in gravity also relate to the Centering Dimension.

The Focus Dimension relates to comprehension, participation and understanding. Information comes into the 'back-brain' as an impression and is *released* through the frontal lobes as an expression. People who lack 'focus' skills are said to have 'attention disorders'. Learning disabilities occur when information does not flow freely in this dimension.

DID YOU KNOW? Music is also an important part of the learning process. Certain types of music actually stimulates right-brain learning. The higher frequency sounds of Mozart, Bach and Baroque music energises the brain and improves our focus, concentration, organization skills, memories, learning capabilities, and we are able to work for longer periods of time. On the other hand, mothers will be pleased to know that low-frequency sounds like rap, hip-hop and certain types of heavy rock music depletes mental energy by increasing physical energy—you have every right to ask your kids to 'turn that noise off' during study sessions!! Another good idea is to paint your children's bedrooms pale blue (calming) and pale yellow (for stimulating the intellect) as both are beneficial for studying. Classrooms should also use the same colours.

Brain Gym® Consultants work with children and adults with learning challenges, learners in disadvantaged schools, learners in regular schools needing to boost their learning efficiency, sport and recreation, business and personal development, anyone wishing to set and achieve their goals more efficiently, and anyone else wanting to make life changes in personal development, relationships, motivation, concentration, memory, and creativity. IBESA (The Institute for Brain Gym & Edu-K in South Africa) are doing a lot of work to try and get Brain Gym integrated into the schools on a permanent basis, with the backing of the education department.

Brain Gym® Consultants are able to tailor specific programmes to each individual. More focused results are obtained this way as by setting a goal for a specific activity we are able to isolate exactly what part of the brain is switched off when confronted with that particular challenge. Results are cumulative, but it can take anything between six weeks to six months to establish the necessary circuitry to hold the proficiency, based on about 10 minutes of Brain Gym® per day. However, clients notice an immediate improvement after a **Brain Gym Consultation**, but *it is in repeating the exercises that the new neural pathways are strengthened*; the more Brain Gym® is practiced, the more that child or adult will improve.

This internationally recognised developmental programme was created and pioneered by Dr. Paul Dennison (Ph.D.), a child development and educational specialist with a background in psychology, and his wife Gail Dennison, a movement specialist. Brain Gym® comprises 30 years of research by educational therapists, developmental optometrists, occupational therapists, neuro-physiologists and other innovative researchers. This research is ongoing and is directed by the Educational Kinesiology Foundation (est. 1987) in Ventura, California, USA, a non-profit educational organization. Brain Gym is being used in schools, corporations, work sites, and during athletic training programs and is found all over the world, from Australia, Africa, Canada, Europe, New Zealand, to Russia,

South America, and Asia. The Dennisons' contributions to the field of educational science has been far-reaching and has transformed the lives of thousands of people across the globe.

Four very basic "Brain Gym" exercises which can be used by anyone and especially in any classroom situation are:

Drink Water

Drinking water is very important for brain hydration and especially before any stressful situation – exams! We tend to perspire under stress and dehydration can negatively affect our concentration.

"Brain Buttons"

Place your index finger and thumb into the slight indentations below the collar bone on each side of the sternum, opening your hands fairly wide. Rub lightly in a pulsing manner whilst placing your other hand over your navel area. Swop hands. This exercise helps improve blood flow to the brain to "switch on" the entire brain before a lesson begins. The increased blood flow helps improve concentration skills required for reading, writing, etc.

"Cross Crawl"

In a standing or prone position, put the right hand across the body to the left knee as you raise it, and then do the same thing for the left hand on the right knee just as if you were marching. This exercise helps coordinate right and left brain by exercising the information flow between the two hemispheres.

"Hook Ups"

Standing or sitting, cross the right leg over the left at the ankles. Take your right wrist and cross it over the left wrist and link up the fingers so that the right wrist is on top. Bend the elbows out and gently turn the fingers in towards the body until they rest on the sternum (breast bone) in the center of the chest. Keep the ankles crossed and the wrists crossed and then breathe evenly in this position for a few minutes. Then uncross the arms and legs and place the fingertips together for a few moments. This works very well for calming the nerves before a test or special event such as making a speech.

"Learning problems are not diseases. They are "crossed wires" in the communication network which connects a child to his world. The learning disabled has a "jammed system" because he has been switched off by today's high pressured competitive approach to education. The wonderful irony is how easily we can switch on our frustrated children to the exciting adventure that learning is meant to be ". PAUL E. DENNISON

In Summary

Chronic one-sided behaviors can polarize the sympathetic and parasympathetic nervous systems, adversely affecting learning, behavior, and immune response resulting in anger, frustration, illness and even depression. The lines of cause and effect become blurred as habitual adrenal responses add to the emotional stress. **Brain Gym® does not claim to "cure" and we have no way of predicting how it will effect each individual. However, its effectiveness is reaffirmed daily by those in the field using the techniques. We can promise that it will set you on the road to maximizing your innate potential. With the use of Brain Gym, practitioners have found that clients begin to heal once the brain body system is more in balance and more able to deal with the issue as a result of defusing stress**

RESEARCH

For a complete research packet on Brain Gym, go to www.braingym.org to order. It contains reports on Experimental research, field studies and anecdotal research on Edu-K and the Brain Gym process.

- During 1994-1996 Dr. Jochen Donczik undertook a series of control studies to support the hypothesis of his 1994 pilot study involving 81 students identified as **dyslexic** – that Dennison’s Laterality Repatterning programme has a significant effect upon reading fluency (as measured by error rate), speed of comprehension (as measured by number-sequencing tests), short-term, working and long-term memory (as measured by word-learning and letter-learning trials). The data support a considerable performance improvement in the above measures – one not possible by random chance – when DLR is used as an intervention. **BRAIN GYM JOURNAL July 2001 Volume XV Nos 1&2**
- From 1994-1999 psychologist Svetlana K. Masgutova Ph.D., undertook a descriptive study at the Ascension Institute in Moscow. The study was designed to identify the correlations between the three dimensions [of the brain] of whole-brain learning, as identified by Paul and Gail Dennison, and infant reflexes, specific muscle groups, and specific Brain Gym activities. The high correlations identified in a population of 522 (made up of 240 kindergarten children, 42 elementary school children and 240 youths and adults) suggest the need for educators to support children in integrating developmental reflexes through such technologies as the Brain Gym Activities. **BRAIN GYM JOURNAL July 2001 Volume XV Nos 1&2**
- Effects of Brain Gym with special education, 5th Grade Students by Carla L. Hannaford ©1990. This essay hypothesizes that Brain Gym movements can eliminate or greatly remodel the symptoms of hyperactivity, learning disabilities, Attention Deficit Disorder, and emotional handicaps. BRAIN GYM RESEARCH PACKET NO. 8
- Effects of Edu-K on psychometric measures of achievements of Special Ed elementary students by Lark Carroll ©1988. The purpose of the study was to determine whether Repatterning and Brain Gym® used over an eight-month period would affect the word recognition, hand-eye coordination, and self-esteem skills of ten students in second and third grade. Results showed greater improvement on the standardized tests than would normally be expected. BRAIN GYM RESEARCH PACKET 7.

FURTHER READING

“Switching On: The Holistic Answer to Dyslexia” – Paul E. Dennison Ph.D.

“Breakthrough for Dyslexia and Learning Disabilities” – Carl. A. Ferreri (D.C. Ph. C) and Richard B. Wainwright (D.C. Ph.D.)

“Brain Gym for All” and “Mind Dynamics”– Melodie de Jager (based on the Dennison’s work); very clear diagrams as well

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Ever seen this??

Look at the chart and say the COLOUR not the word

YELLOW	BLUE	ORANGE
BLACK	RED	GREEN
PURPLE	YELLOW	RED
ORANGE	GREEN	BLACK
BLUE	RED	PURPLE
GREEN	BLUE	ORANGE

Left – Right Conflict

Your right brain tries to say the colour but your left brain insists on reading the word.